



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede airworthiness directive (AD) 2013-15-10 that applies to certain Rolls-Royce (RR) RB211 turbofan engines. AD 2013-15-10 requires inspecting the intermediate-pressure compressor (IPC) rotor shaft rear balance land for cracks. This AD eliminates a terminating action, expands one inspection and eliminates others. This proposed AD would require inspecting the IPC rotor shaft rear balance land for cracks and eliminate certain other inspections. We are proposing this AD to detect cracking on the IPC rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

DATES: We must receive comments on this proposed AD by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418; email:

http://www.rolls-royce.com/contact/civil_team.jsp; Internet:

<https://www.aeromanager.com>. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2007-28059; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the mandatory continuing airworthiness information, regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Kenneth Steeves, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New

England Executive Park, Burlington, MA 01803; phone: 781-238-7765; fax: 781-238-7199; email: kenneth.steeves@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

On July 22, 2013, we issued AD 2013-15-10, Amendment 39-17526 (78 FR 54149, September 3, 2013), for all RR RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, 895-17, 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84, and 980-84 turbofan engines. AD 2013-15-10 requires inspecting the IPC rotor shaft rear balance land for cracks and requires on-wing and in-shop inspections for the Trent 500, 700, 800, and 900 engines. AD 2013-15-10 resulted from detection of cracks

in Trent 500, Trent 700 and Trent 800 IPC rotor shaft rear balance lands and analysis that determined similar cracks may exist in Trent 900 engines. We issued AD 2013-15-10 to detect cracking on the IPC rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

Actions Since AD 2013-15-10 Was Issued

Since we issued AD 2013-15-10, Amendment 39-17526 (78 FR 54149, September 3, 2013), we determined that repetitive in-shop eddy current inspections (ECIs) are still required for certain RR RB211-Trent 700 and 800 engines even after the terminating action in AD 2013-15-10 was accomplished. We also determined that on-wing inspections are not required for certain modified RR RB211-Trent 500 and 900 engines, and that certain in-shop visual inspections are not required for certain RR RB211-Trent 500, 700, 800, and 900 engines.

Relevant Service Information

We reviewed RR Alert Non-Modification Service Bulletin (NMSB) No. RB.211-72-AG264, Revision 5, dated March 21, 2011; RR Alert NMSB No. RB.211-72-AG270, Revision 4, dated March 21, 2011; RR Alert NMSB No. RB.211-72-AG085, Revision 2, dated July 7, 2011; RR NMSB No. RB.211-72-G448, Revision 3, dated July 7, 2011; RR Alert NMSB No. RB.211-72-AH059, dated December 11, 2012; and RR Alert NMSB No. RB.211-72-AH058, dated December 13, 2012. These service bulletins describe procedures for inspecting the IPC shaft rear balance land on RB211-Trent 500, 700, 800, and 900 engines.

European Aviation Safety Agency AD 2014-0152, dated June 20, 2014, corrected June 25, 2014, includes repetitive in-shop ECI, elimination of repetitive on-wing inspections, and elimination of in-shop visual inspections for certain engines.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

This proposed AD would retain the requirements of AD 2013-15-10 for inspecting the IPC rotor shaft rear balance land for cracks. This proposed AD would also require that the repetitive in-shop ECIs in AD 2013-15-10 be performed even after modifying certain engines. This proposed AD would also eliminate repetitive on-wing inspections for certain other engines, and eliminate certain in-shop visual inspections for all engines.

Costs of Compliance

We estimate that this proposed AD would affect about 136 engines installed on airplanes of U.S. registry. We also estimate that it would take about 14 hours per engine to perform the inspections required by this AD. The average labor rate is \$85 per hour. Replacement parts are estimated to cost about \$2,271 per engine. Based on these figures, we estimate the cost of the proposed AD on U.S. operators to be \$470,696.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator.

Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. Amend § 39.13 by removing airworthiness directive (AD) 2013-15-10, Amendment 39-17526 (78 FR 54149, September 3, 2013), and adding the following new AD:

Rolls-Royce plc: Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD supersedes AD 2013-15-10, Amendment 39-17526 (77 FR 54149, September 3, 2013).

(c) Applicability

This AD applies to all Rolls-Royce plc (RR) RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60,

875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, 895-17, 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84, and 980-84 turbofan engines.

(d) Unsafe Condition

This AD was prompted by reports of cracks in Trent 500, Trent 700 and Trent 800 intermediate-pressure compressor (IPC) rotor shaft rear balance lands and analysis that determined similar cracks may exist in Trent 900 engines. We are issuing this AD to detect cracking on the IPC rotor shaft rear balance land, which could lead to uncontained engine failure and damage to the airplane.

(e) Compliance

Comply with this AD unless already done.

(1) RB211-Trent 700 Engines—Rear Balance Land Inspections

(i) Within 625 cycles-in-service (CIS) after June 29, 2012, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IPC rotor shaft rear balance land. Use RB211 Trent 700 Series Propulsion System Alert Non-Modification Service Bulletin (NMSB) No. RB.211-72-AG270, Revision 4, dated March 21, 2011, paragraphs 3.A.(2)(a) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c) for in-shop procedures, or paragraphs 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c), for on-wing procedures, to do the inspection.

(ii) Thereafter, repeat the inspection within every 625 cycles-since-last inspection (CSLI). You may count CSLI from the last borescope inspection or the last ECI, whichever occurred later.

(iii) At each shop visit after the effective date of this AD, perform an ECI of the IPC rotor shaft rear balance land. Use RB211 Trent 700 and Trent 800 Series Propulsion

Systems Alert NMSB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, paragraphs 3.A. through 3.B., to do the inspection.

(iv) To meet the requirement of paragraph (e)(1)(i) of this AD, instead of a borescope inspection, you may perform an ECI using paragraph (e)(1)(iii) of this AD.

(2) RB211-Trent 800 Engines—Rear Balance Land Inspections

(i) Within 475 CIS after June 29, 2012, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IPC rotor shaft rear balance land. Use RB211 Trent 800 Series Propulsion System Alert NMSB No. RB.211-72-AG264, Revision 5, dated March 21, 2011, paragraphs 3.A.(2)(a) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c), for in-shop procedures, or paragraphs 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c), for on-wing procedures, to do the inspection.

(ii) Thereafter, repeat the inspection within every 475 CSLI. You may count CSLI from the last borescope inspection or the last ECI, whichever occurred later.

(iii) At each shop visit after the effective date of this AD, perform an ECI of the IPC rotor shaft rear balance land. Use RB211 Trent 700 and Trent 800 Series Propulsion Systems Alert NMSB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, paragraphs 3.A. through 3.B., to do the inspection.

(iv) To meet the requirement of paragraph (e)(2)(i) of this AD, instead of a borescope inspection, you may perform an ECI using paragraph (e)(2)(iii) of this AD.

(3) RB211-Trent 500 Engines—Rear Balance Land Inspections

(i) Within 340 CIS after October 8, 2013, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IPC rotor shaft

rear balance land. Use RB211 Trent 500 Series Propulsion Systems Alert NMSB No. RB.211-72-AH058, dated December 13, 2012, paragraphs 3.A.(2)(a) through 3.A.(2)(c), 3.A.(3)(a) through 3.A.(3)(d), and 3.A.(5)(a) through 3.A.(5)(c), for on-wing procedures, to do the inspection.

(ii) Thereafter, repeat the inspection within every 340 CSLI. You may count CSLI from the last borescope inspection or the last ECI, whichever occurred later.

(iii) At each shop visit after the effective date of this AD, perform an ECI of the IPC rotor shaft rear balance land. Use RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 3, dated July 7, 2011, paragraphs 3.D.(4) through 3.D.(5), 3.D.(6)(f) through 3.D.(7)(w), 3.D.(8)(f) through 3.D.(8)(w), and 3.D.(11) to do the inspection.

(iv) To meet the requirement of paragraph (e)(3)(i) of this AD, instead of a borescope inspection, you may perform an ECI using paragraph (e)(3)(iii) of this AD.

(4) RB211-Trent 900 Engines—Rear Balance Land Inspections

(i) Within 280 flight cycles after October 8, 2013, or before the next flight after the effective date of this AD, whichever occurs later, borescope inspect the IPC rotor shaft rear balance land. Use RB211 Trent 900 Series Propulsion Systems Alert NMSB No. RB.211-72-AH059, dated December 11, 2012, paragraphs 3.A.(2)(a) through 3.A.(2)(c), 3.A.(3)(a) through 3.A.(3)(d), and 3.A.(5)(a) through 3.A.(5)(c) for on-wing procedures, to do the inspection.

(ii) Thereafter, repeat the inspection within every 280 CSLI. You may count CSLI from the last borescope inspection or the last ECI, whichever occurred last.

(iii) At each shop visit after the effective date of this AD, perform an ECI of the IPC rotor shaft rear balance land. Use RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 3, dated July 7, 2011, paragraphs 3.D.(4) through 3.D.(5), 3.D.(6)(f) through 3.D.(7)(w), 3.D.(8)(f) through 3.D.(8)(w), and 3.D.(11) to do the inspection.

(iv) To meet the requirement of paragraph (e)(4)(i) of this AD, instead of a borescope inspection, you may perform an ECI using paragraph (e)(4)(iii) of this AD.

(5) RB211-Trent 500, RB211-Trent 700, RB211-Trent 800, and RB211-Trent 900 Engines IPC Balance Weight Removal

(i) RB211-Trent 500 engines. At the next shop visit after the effective date of this AD, remove the IPC balance weights, part numbers (P/Ns) AS44695-150, AS44695-175, AS44695-200, AS44695-225, AS44695-250, AS44695-275, and AS44695-300.

(ii) RB211-Trent 700 engines. At the next shop visit after the effective date of this AD, remove the IPC balance weights, P/Ns AS44695-150, AS44695-175, AS44695-200, AS44695-225, AS44695-250, AS44695-275, and AS44695-300.

(iii) RB211-Trent 800 engines. At the next shop visit after the effective date of this AD, remove the IPC balance weights, P/Ns AS44695-150, AS44695-175, AS44695-200, AS44695-225, AS44695-250, AS44695-275, and AS44695-300.

(iv) RB211-Trent 900 engines. At the next shop visit after the effective date of this AD, remove the IPC balance weights, P/Ns AS44695-150, AS44695-175, AS44695-200, AS44695-225, AS44695-250, AS44695-275, and AS44695-300.

(v) Once you have removed the IPC balance weights, P/Ns AS44695-150, AS44695-175, AS44695-200, AS44695-225, AS44695-250, AS44695-275, and AS44695-300, do not re-install them on any IPC shaft rear balance land.

(6) RB211-Trent 500, RB211-Trent 700, RB211-Trent 800, and RB211-Trent 900 Engines—Terminating Action to Repetitive Borescope Inspections

(i) Removal of the IPC balance weights as described in paragraph (e)(5) of this AD terminates the repetitive borescope inspections of paragraphs (e)(1) through (e)(4) of this AD. However, at each shop visit you must still do the ECI required by paragraphs (e)(1) through (e)(4) of this AD.

(ii) Reserved.

(f) Credit for Previous Actions

(1) RB211-Trent 700 engines.

(i) If you borescope inspected an RB211-Trent 700 engine, before the effective date of this AD, using RB211 Trent 700 Series Propulsion System Alert NMSB No. RB.211-72-AG270, Revision 1, dated December 14, 2009; or Revision 2, dated December 21, 2010; or Revision 3, dated February 25, 2011, you have met the requirements of paragraph (e)(1)(i) of this AD.

(ii) If you eddy current inspected an RB211-Trent 700 engine, before the effective date of this AD, using RB211 Trent 700 and Trent 800 Series Propulsion Systems Alert NMSB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, you met the ECI requirement of paragraph (e)(1)(iii) of this AD. However, you are still required to perform the repetitive inspections required by paragraphs (e)(1)(ii) and (e)(1)(iii) of this AD.

(2) RB211-Trent 800 engines.

(i) If you borescope inspected an RB211-Trent 800 engine, before the effective date of this AD, using RB211 Trent 800 Series Propulsion System Alert NMSB No. RB.211-72-AG264, Revision 3, dated December 21, 2010; or Revision 4, dated February 25, 2011, you met the requirements of paragraph (e)(2)(i) of this AD.

(ii) If you eddy current inspected an RB211-Trent 800 engine, before the effective date of this AD, using RB211 Trent 700 and Trent 800 Series Propulsion Systems Alert NMSB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, you met the ECI requirement of paragraph (e)(2)(i) of this AD. However, you are still required to perform the repetitive inspections required by paragraphs (e)(2)(ii) and (e)(2)(iii) of this AD.

(3) RB211-Trent 500 engines.

(i) If you borescope inspected an RB211-Trent 500 engine, before the effective date of this AD, using RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010, you met the requirement of paragraph (e)(3)(i) of this AD.

(ii) If you eddy current inspected an RB211-Trent 500 engine, before the effective date of this AD, using RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010, you met the ECI requirement of paragraph (e)(3)(iii) of this AD. However, you are still required to perform the repetitive inspections required by paragraphs (e)(3)(ii) and (e)(3)(iii) of this AD.

(4) RB211-Trent 900 engines.

(i) If you borescope inspected an RB211-Trent 900 engine, before the effective date of this AD, using RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010, you met the requirements of paragraph (e)(4)(i) of this AD.

(ii) If you eddy current inspected an RB211-Trent 900 engine, before the effective date of this AD, using RB211 Trent 500 and Trent 900 Series Propulsion Systems NMSB No. RB.211-72-G448, Revision 2, dated December 23, 2010, you met the ECI requirement of paragraph (e)(4)(i) of this AD. However, you are still required to perform the repetitive inspections required by paragraphs (e)(4)(ii) and (e)(4)(iii) of this AD.

(g) Definition

For the purpose of this AD, a shop visit is defined as the introduction of an engine into the shop and disassembly sufficient to expose the IPC module rear face.

(h) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures in 14 CFR 39.19 to make your request.

(i) Related Information

(1) For more information about this AD, contact Kenneth Steeves, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7765; fax: 781-238-7199; email: kenneth.steeves@faa.gov.

(2) Refer to MCAI European Aviation Safety Agency, AD 2014-0152, dated June 20, 2014 and corrected on June 25, 2014, for more information. You may examine the

MCAI in the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2007-28059.

(3) RR Alert NMSB No. RB.211-72-AG264, Revision 5, dated March 21, 2011; RR Alert NMSB No. RB.211-72-AG270, Revision 4, dated March 21, 2011; RR Alert NMSB No. RB.211-72-AG085, Revision 2, dated July 7, 2011; RR NMSB No. RB.211-72-G448, Revision 3, dated July 7, 2011; RR Alert NMSB No. RB.211-72-AH059, dated December 11, 2012; and RR Alert NMSB No. RB.211-72-AH058, dated December 13, 2012, which are not incorporated by reference in this AD, can be obtained from Rolls-Royce plc, using the contact information in paragraph (i)(4) of this AD.

(4) For service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418; Internet: http://www.rolls-royce.com/contact/civil_team.jsp.

(5) You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7125.

Issued in Burlington, Massachusetts, on August 28, 2014.

Colleen M. D'Alessandro,
Assistant Directorate Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

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